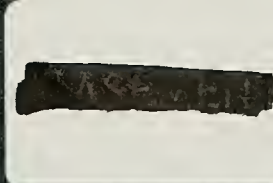


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# The Future of the IMF

Ricardo J. Caballero<sup>1</sup>

01/07/2003

In spite of significant institutional and macroeconomic reforms over the last decade or two, capital flows to developing economies remain highly volatile. In 1996, net private capital flows to emerging markets reached US\$230 billions; by 1997 these flows had been cut in half; by 1998 halved again; and after a mild recovery during 1999, flows fell in 2000 and 2001 to slightly over one-tenth the level of 1996. With the exception of developing Asia, 2002 does not look much rosier.<sup>2</sup>

The economic, political and social costs of these large swings in capital flows are enormous. The most vivid examples are seen in the economies that experience deep crises including, since 1997, Thailand, Indonesia, Malaysia, Korea, Russia, Brazil, Turkey and Argentina.

While in many instances there are important domestic deficiencies behind these reversals, there is also a well founded sense that international financial markets often exacerbate the problem.<sup>3</sup> It is not surprising, then, that as with the debt crisis of the early 1980s and the Mexican crisis of the 1990s, this new wave of crises has led to innumerable calls for deep reform to these markets.<sup>4</sup> Nowhere is this more apparent than in the design of new “rules of engagement” for the International Monetary Fund. The important work of multiple official and unofficial commissions, leveraged by its own rethinking, promises to transform this institution from the ground up. In a nutshell, most experts agree that the International Monetary Fund should be much more focused, transparent,

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<sup>1</sup> MIT and NBER ([caball@mit.edu](mailto:caball@mit.edu); <http://web.mit.edu/caball/www>). Prepared for the January 2003 meetings of the American Economic Association. I’m grateful to Olivier Blanchard, Eduardo Borensztein, Fernando Broner, Stanley Fischer, Arvind Krishnamurthy, Bengt Holmstrom, Paulo Mauro, Allan Meltzer, Stavros Panageas, Jeffrey Sachs and Nicholas Stern for their comments. I thank the National Science Foundation for financial support.

<sup>2</sup> See Table 1.3, p. 12, in World Economic Outlook, September 2002, IMF.

<sup>3</sup> I should point out at the outset that this claim does not exonerate emerging economies experiencing fiscal crises. Quite the opposite, is even less understandable that countries would be willing to experiment with fiscal deficits when doing so risks triggering large crises.

<sup>4</sup> See Fischer (2002) for a discussion of recent reforms and the current state of the International Financial System.



predictable, and quick in its interventions, and its role limited to surveillance (pre-crisis) and lender-of-last resort/bankruptcy-court (during crises) activities.<sup>5</sup> This seems right.

I believe, however, that by focusing almost exclusively on the needs of countries undergoing deep crises --- highly illiquid and “bankrupt” economies--- these reform proposals have left unaddressed a significant fraction of the costs associated with capital flows reversals. An important share of these costs are borne by countries that experience deep contractions but do not undergo full blown crises, and much of the costs experienced by those countries that do fall into deep crises are experienced well before the “Diamond-Dybvig-like” phase of the crisis develops. Often, the latter is just the final stage of a prolonged and politically thorny economic period of sharply reduced access to international capital markets. Surely, the anticipation of a more orderly workout and access to a few credit lines should the crisis phase arrive, would (by backward induction) eliminate some of the costs that precede these events as well. But this benefit is indirect only and relies on a chain of reasoning that requires more rationality and trust in the new system than financial markets in panic mode deserve credit for.<sup>6</sup> Developing economies need a more direct and robust mechanism to deal with capital flow reversals. This is the starting point of my proposal.

*Emerging markets should be endowed with instruments of hedging and insurance against the disastrous events associated to capital flows reversals.*

Reflecting their value, such instruments have a potential demand that is too great for any public institution to satisfy. But the externalities present, especially at the market development stage, also are too important for the private sector to spontaneously create these instruments in adequate quantities. And, once created, the potential incentive effects on macroeconomic policy and private sector decisions are significant enough to warrant close surveillance. These two features --- externalities and perverse incentive effects --- justify the participation of a public institution in this solution. Should it be the International Monetary Fund, perhaps with the cooperation of the other IFIs? I do not want to get caught in an argument with institutional purists. Let me simply suggest that, with the goal of significantly reducing the turmoil associated to the volatility of capital flows, there is a need for an International Markets Facilitator (which I will refer to as IMF, for short).

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<sup>5</sup> See Sachs (1995) for an early discussion of this new conception of the IMF. See Williamson (2000) for a nice summary and discussion of the main recent reports, including the Meltzer (2000) report to the US Congress.

<sup>6</sup> Similarly, I find the bank-run view of crises useful as a stark characterization of the extreme nonlinearity of crises but potentially misleading as a source of remedies. Many of the canonical medicines, relying on sophisticated out-of-equilibria reasoning, are probably overly dependent on the rational nature and simplicity of runs in these models.



Under this perspective, the IMF would have two departments: A *Contingent-Markets Department* and a *Crisis Department*.

The functioning of the Crisis Department has being described in many good recent reports.<sup>7</sup> Here, I focus on the less explored Contingent-Markets Department. This department would have three primary tasks:

- 1) *To help identify each country's contractible contingent basis and develop the corresponding contingent bonds.*
- 2) *To help create and regulate Contingent-Emerging-Markets-CDO-like funds or equivalent.*
- 3) *To help design a macroeconomic policy framework consistent with the insurance mechanism developed for the country, and to monitor its fulfillment.*

## II. The Problem

In principle, one of the great virtues of financial markets is that they allow the borrower to decouple expenditure from temporary fluctuations in resources. This is extremely important for a small country in smoothing its business cycle and preventing wasteful disruptions of long-term projects. A breakdown in this service is particularly serious for an economy still catching up with the developed world, because this typically makes it a net borrower even during normal times. Unfortunately, in emerging markets these breakdowns happen all too frequently.

A comparison of the experiences of Australia and Chile during the Asian/Russian crises isolates the problem well. Both Australia and Chile have very open economies with exports that are intensive in volatile commodities. Australia has deep domestic financial markets and links to international financial markets. Chile, while often used as an example among emerging economies for its good macroeconomic policy and institutional development, does not have the degree of financial development and links with international financial markets that Australia has.

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<sup>7</sup> Williamson (2000) advocates merging much of the IMF's existing liquidity facilities into a single Crisis Facility. Interestingly, he separates this from the Compensatory and Contingent Financing Facility (CCFF), which is designed to deal with exogenous shocks to the country. In a sense, as will be clear later on, my proposal contemplates a similar distinction. The role of the IMF in this proposal is to foster *private* markets that could fulfill a role similar to the CCFF facility, but at a much larger scale. As is currently conceived, the CCFF is not designed to deal with macroeconomic crises and financial shocks but only with a limited amount of income stabilization for commodity dependent poor economies.

The story of Australia during that episode is a textbook one. With most of its neighbors crumbling and eventually the whole developing world in disarray, its terms of trade experienced a significant decline. Seeing the potentially recessionary consequences of such decline, the Central Bank of Australia loosened monetary policy. At the end of the day, neither consumers nor firms altered their plans. The whole adjustment was done by a current account deficit that rose temporarily from 2 to 6 percent of GDP, and was financed entirely by an increase in capital inflows.

The story of Chile has a similar beginning but a very different conclusion. As its terms of trade (essentially, the price of copper) deteriorated, Chile initially attempted to smooth things through macroeconomic policy, especially fiscal policy. But as the external conditions worsened, Chile's international capital markets began tightening. Despite very low levels of external debt, its current account deficit above 6% began worrying many observers. Resident (especially foreign) banks began pulling resources out of the country and soon the currency was subject to repeated attacks. Monetary policy could not be used to soften the impact of the decline in terms of trade because it was locked into fending off the speculative attacks and attempting to slow down the sharp reversal in capital inflows. When all was said and done (by the end of 1999), the current account had turned into a surplus to accommodate the tight financial conditions and expenditure had declined by about 15% relative to its pre-shock trend. My back of the envelope calculations suggest that Chile's contraction was nearly ten times larger than it would have been had it been able to count on unrestricted access to international financial markets.<sup>8</sup>

Many have argued that part of the Chilean adjustment was attributable to domestic policy rather than to a sudden stop in capital flows. Perhaps, but that is just a matter of degree of adjustment. This discussion clouds the more important point that prudent emerging economies often experience severe *precautionary recessions* when the possibility of an open crisis is too close for comfort. These deep precautionary recessions are *part of the cost of living in an environment of volatile capital flows*. They may be less "spectacular" than open crises are, but cumulatively (across countries and time) they account for a significant fraction of the costs of capital flows volatility. Moreover, open crises often are preceded by a long period of precautionary recessions. And at times, it is the social and political unrest that these periods cause that ends up triggering the full blown crises. If one could smooth these precautionary recessions, much of the justification for a large Crisis Department probably would be gone as well.

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<sup>8</sup> See Caballero (2001, 2003).

*How can Emerging Markets be aided in responding to shocks as smoothly as Australia does? What is the role of the IMF in making this possible?*

### III. A Proposal

What these countries ultimately need is access to *hedging and insurance* instruments to guard against the disastrous events caused by volatile capital flows. It makes no sense for these economies to have to self-insure through costly accumulation of large international reserves and stabilization funds. Most individuals would be “underinsured” if they had to leave a million dollars aside for a potential automobile collision and the liabilities that would follow, rather than buying insurance against such event; countries are no different. Underinsurance is what greatly amplifies these countries’ recessions.

#### III.1 Hedging Markets

Let us return to our main example, Chile. It does not take much insight to notice that its large recessions and crises are linked closely to sharp declines in the price of copper. By now, this is an accepted reality for Chileans and foreigners alike. This should not be the case, though. As I argued earlier, during extreme events the Chilean contractions are many times larger than they ought to be. The problem is not in the wealth impact of a decline in the price of copper, Chile’s main export, but rather in the many rational and irrational reactions that such a decline generates on the part of domestic and foreign investors. It is the capital flows reversal that is behind the “disaster.” In this context, it is apparent that Chile should try to insure or hedge against these disasters and that the instrument should be made contingent on the price of copper. (Actually, an even better instrument would be indexed to the price of copper and the high-yield spread.<sup>9</sup>)

But, don’t Chile and other commodity-exporter economies do this already through derivative markets? And doesn’t the CCFL at the IMF provide some of that insurance as well? *No*. What CODELCO (Chile’s state Copper company) and PEMEX (Mexico’s state Oil company) and others do is to hedge some of the short-run revenue impact of fluctuations in the corresponding spot prices; in particular, they attempt to stabilize the government’s

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<sup>9</sup> See Caballero (2003) for a proposal of this nature, and Caballero and Panageas (2003) for a formal quantitative framework to help designing these hedging strategies.



revenue.<sup>10</sup> The CCFL does some of the same for poor economies. But this means stabilizing the daily “wiggles” and the direct effect of commodity prices on income flows, *not* the infrequent but much larger recessions triggered by the perverse reactions of capital markets to sharp declines in commodity prices and other distress indicators.<sup>11</sup> In fact, I believe this is one of the reasons why countries have not expressed great interest in previous attempts to develop commodity-contingent bonds.<sup>12</sup> Done in small amounts, just to stabilize fiscal revenues, is not a significant hedge against the much bigger problem of capital flow reversals and crises, and can be well substituted by domestic stabilization funds and existing derivative markets.

*Hedging the financial mechanism behind macroeconomic disasters is a problem an order of magnitude larger (ten times larger?) than what these countries do, or what conventional commodity-derivative markets could absorb at this time.*

For example, Chile could eliminate most ---if not all-- of its deep recessions by embedding into its external bonds a long-term put option, yielding US\$6-8 billions when the price of copper falls by more than two standard deviations for a semester or more. Of course, this example is only meant to be illustrative. The optimal design of such bonds would have other contingencies (including the high yield spread), several tranches, and take into account any possibility of (limited) price manipulation.<sup>13</sup>

How much should the insurance component of the bond cost? If it was fairly priced, it should cost about \$500 millions (lump-sum).<sup>14</sup> This is surely much less than the savings from the reduction in sovereign risk that would be attainable in the absence of the possibility of external crises, or the additional borrowing costs paid by the country to avoid short-run borrowing. And it is certainly much cheaper than the precautionary recessions and other imperfect preventive measures that Chile currently undertakes, and is praised for.

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<sup>10</sup> The largest withdrawals from Chile’s “famous” copper-stabilization-fund (a very costly self-insurance mechanism) have amounted to less than 2 percent of revenues.

<sup>11</sup> Surely, hedging the income flows solves part of the financial shock as well by stabilizing the country’s “collateral.” But the markets reactions to the price of the country’s main commodity signal, especially when it comes at times of tight international financial markets, seems much larger than what reasonable collateral models can account for.

<sup>12</sup> See Privolos and Duncan (1991) for an overview of early developments in commodity-linked financial instruments. Two interesting case are Mexico’s “petrobonds” and, for developed economies, France’s “Giscards” (indexed to gold).

<sup>13</sup> Markets seem to be more willing to offer credit lines rather than this type of derivatives. The disadvantage of the former is that if what affects the country is a financial constraint (which is often confused with a solvency constraint in the literature) rather than a short run liquidity crisis, then the credit line would probably crowd out other loans rather than inject net resources.

<sup>14</sup> See Caballero and Panageas (2003) for such calculations.

But of course, if Chile were to go to the markets to place such bonds, they would cost Chile far more than “fair” price. Today, there is no natural market for holding such instruments, and the corresponding derivatives markets would not suffice to cover the position of the writer of the option.

This situation can change, very much as the market for (natural) catastrophe-bonds in developed economies has changed over the last decade. Yet, there is little incentive for Chile to do it unilaterally. The costs of creating a market, with great benefits to many other countries, probably would be high; symmetrically, the incentives for waiting and free-riding on some other country to go ahead first would be substantial. *The IMF has a key role to play here in resolving this impasse and becoming a catalyst for such a development.* It could force troubled economies to swap their debt for contingent bonds and subsidize well behaved countries to do so voluntarily and take the lead.

As the restructuring of the bank loans caught in the debt crisis of the 1980s led to the development of the bond market for emerging economies, perhaps the forthcoming restructuring of Argentina’s sovereign bonds can be used as an opportunity to create some of the markets for contingent bonds. On the other end, as the bond markets begin to reopen for the best emerging economies, this can be used as an opportunity for the IMF ---teaming up with the main investment banks and other IFIs--- to encourage and help them restructure their liabilities with built in contingencies. CODELCO (Chile) and PEMEX (Mexico) are good examples of public companies that would not only improve their own risk management by doing so, but also would help in the process to create contingent markets of great value for their respective countries. Moreover, the list of countries, especially of commodity-dependent economies, waiting to reenter the markets during 2003 is long. They should all be encouraged, and perhaps coordinated, to consider the macroeconomic hedging virtues of issuing contingent bonds.

Is Chile unique in terms of the causes of its external crises and thus not a useful benchmark? Not really. It is true that Chile is very special in terms of the great precision of its capital-flow-reversal indicators. But most emerging economies have some indicators that could form the basis for such a strategy. For example, in the case of Mexico, a combination of the price of oil and US GDP growth would be a good starting point. For Brazil, a high yield index together with the price of coffee. Russia could build on the price of oil and a high yield index, Korea on the price of semiconductors and the NASDAQ, and so on.<sup>15 16</sup> *Finding out which factors are key for each country,*

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<sup>15</sup> It is important that the insurance and hedging instruments be contingent on factors that are not controlled too easily by the individual country. Issuing external debt in local currency is unlikely to provide the solution any time soon, in the magnitude required, precisely because it fails this requirement.

*and perhaps even constructing a few indices that could form a core of contingencies for more than one country, also should be part of the job description of the Contingent-Markets Department.*

### III.2 Asset Class Protection

Who in the private sector would provide the insurance and become the hedging counterpart? The most obvious answer is the current emerging markets' specialists.

But this is not ideal. Specialists are needed for information-intensive funding. Their information is particularly valuable when a country is in distress and nobody else wants to fund it. If specialists were to be the insurance providers, then they would see their resources shrink precisely when they are needed the most. This would not only curtail their ability to arbitrage (and finance) the high return opportunities that a country in distress offers, but would create the potential for "contagion" and collapses of the "asset class."<sup>17</sup>

Since the hedging and insurance instruments advocated here are contingent on observable variables, such as the price of copper and oil, developed economies GDP, high yield spreads, etc., there is no need for emerging markets or country-specific expertise to invest in such instruments. Ideally, these risks should be decoupled entirely from the risks of the underlying emerging economy issuer. One structure that would allow for such decoupling is Collateralized Debt Obligations (CDO). A CDO would purchase a diversified portfolio of emerging markets contingent bonds and issue several tranches of bonds. The most senior of these bonds would absorb the explicit contingency but not the default risk. Specialists would take the latter through the mezzanine (junior bonds) and subordinated debt/equity tranches. Ideally, global pension funds and insurance companies would invest on the senior tranches and hence provide the part of the insurance that does not depend on the country's actions.<sup>18</sup>

Emerging markets (EM) CDOs already exist ---although, as far as I know, not with the contingency that is at the core of this proposal--- but they are in their infancy and undervalued. They typically require significantly more

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<sup>16</sup> Interestingly, among the countries involved in the recent wave of crises one observes that the terms of trade of Thailand, Korea, Russia (especially), Brazil, Turkey and Argentina, declined sharply before and during their corresponding periods of turmoil.

<sup>17</sup> See Krishnamurthy (2003) for a model of amplification and shortages in insurance capital.

<sup>18</sup> The literature emphasizes moral hazard and other deliberate actions by governments as a source of market segmentation and the need for specialists. But there is a more basic and pervasive reason for specialists: lack of understanding of the workings of developing economies and fears about local policymakers' competence. The latter is yet another reason for why local-currency denominated debt and GDP-indexed bonds (see, e.g., Borensztein and Mauro (2002)), while extremely appealing on insurance grounds, are unlikely to catch the attention of broad markets for now.



equity and are able to generate far fewer prime tranches than comparable U.S. High Yield backed CDOs. *The IMF could play a role here as well, perhaps by directly investing in the subordinate-debt/equity tranche of these new Contingent-EM CDOs.*<sup>19</sup> This investment not only would yield direct benefits to emerging markets but also would be highly leveraged by the private sector --- a goal in itself in all the recent IMF-reform reports. In addition, the IMF's participation in such activity would help to reduce the current undervaluation of this asset-backed investment by improving the emerging markets expertise and the information available to the CDO's asset managers, as well as the monitoring of these managers. The IMF could also use these CDOs as an instrument to incentivize good reporting and accounting standards from emerging markets corporations and governments by including these as mandates in the CDOs it invests in.

This structure would also have the virtue of leveraging the informed investors' capital without destroying their incentives in the process. Something akin to the insurance and reinsurance split in the catastrophe insurance market.

Regardless of whether the final product takes this specific Contingent-EM-CDO form or not, the message is clear: *Ideally, the hedging and insurance of factors that are not under the direct control of emerging markets economies --- so that understanding their payoff does not require emerging markets knowledge --- should be allocated to investors other than the emerging markets specialists. The IMF can facilitate this optimal allocation by helping to decouple default and contingency risks.*

### III.3 Insurance Based Macroeconomic Policy

Finally, the Contingent-Markets Department must also have a Surveillance Division. Up to now, I have treated the country as a cohesive unit maximizing its social welfare. Of course, in reality the government and private agents are unlikely to fully internalize the consequences of their actions for the country's exposure to external crises. Because of this, countries will tend to underinsure with respect to external crises. This underinsurance takes many forms, such as hedging too little and undoing the hedging of the country as a whole by over-borrowing during booms.<sup>20</sup> Macroeconomic policy can influence the extent of this problem. *The Surveillance Division should help the*

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<sup>19</sup> Ex-post assistance lending could be done through the CDOs as well. More generally, the interactions between these investments and other IMF lending facilities need to be studied carefully.

<sup>20</sup> This section is based on Caballero and Krishnamurthy (2002a,b and 2003).

*country design and monitor the compliance of a domestic policy framework that preserves the resilience to external crises gained by the insurance mechanism.*

On the government side, the main concern is with fiscal policy. The goal of the hedging strategy is not to raise average expenditure but to change from a pro-cyclical fiscal policy – as most emerging economies are forced to have by the severity of the capital flows reversal --- to a countercyclical one. To this effect, *the country should have a structural fiscal rule that ensures enough surpluses during the boom phase to at least cover the government's share of the cost of the hedging strategy.*

Aligning the incentives of the private sector can be more subtle. The silver lining of crises is that, through their anticipated effect on relative asset prices, they induce precautionary behavior. Borrowers are more cautious in acquiring foreign currency liabilities, and arbitrageurs-lenders are more willing to hoard international liquidity for times of crises when a dollar is worth the most. The insurance arrangement obviously weakens this incentive. Some of this reduction is good --- that's the idea of the insurance! --- but in all likelihood it will be excessive, especially when domestic financial development is limited. This happens because lenders during aggregate distress are unable to extract the full social value of their funds when the financial system is not well developed, and this situation is worsened by the competition brought about by the insurance funds.

How can policy be used to limit the excessive undoing of the aggregate insurance arrangement? It turns out that if the country has gained sufficient inflation-credibility, it can use monetary policy to offset the incentive problem caused by the insurance. Concretely, it can make sure that the exchange rate still depreciates significantly when the country faces the conditions that would have triggered the external crisis in the absence of the insurance. The anticipation of such action would induce private agents to preserve international liquidity despite the insurance arrangement. That is, the country would adopt a flexible exchange rate system with a tightly followed long-run inflation targeting rule, which is relaxed at times according to a criterion based on the same contingencies of the insurance arrangement

Of course, if a country has not managed to control inflation-credibility or has other reasons to “fear floating”, then it will not be able to use monetary policy in a countercyclical fashion. From an insurance perspective, the cost of this loss is not the conventional liquidity-cost of not having access to monetary policy, but rather is having lost an inexpensive *incentive* mechanism to offset the perverse effects of the insurance arrangement. Such

countries may have to resort to much costlier measures, such as taxes on capital inflows and stringent international liquidity requirements on domestic banks and corporations.

*The IMF should supervise the implementation of such macroeconomic policy, in exchange for which the country may be given cheaper access to the Crisis Department, should the need arise.*

## IV. Final Remarks

The Contingent-Markets Department should be in charge of all sources of capital inflows volatility that are potentially contractible. The Crisis Department only should be left with non-contractible shocks: totally unexpected events and domestic misbehavior and blunders. Adequately managed, a country's bankruptcy can be thought of as an ex-ante insurance arrangement for these ill-specified non-contractible shocks.

The thesis of this proposal is that there is a lot more that is potentially contractible than seems to have been acknowledged, and that the IMF has a crucial role in fostering the corresponding markets. Even in the best managed emerging economies, *aggregate* risk management is being done with stone-age instruments and methods. Should these contingent markets be developed: a) many crises would be stopped well before they develop; b) the costly self-insurance measures and deep precautionary recessions experienced by prudent emerging market economies would be reduced significantly; and c) much of the above would be done by the private rather than the official sector.

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